

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

TIBOR BOROS, ET AL.

Application No.: Not yet Assigned

Filed:

For: **DETERMINING A SPATIAL
SIGNATURE USING A ROBUST
CALIBRATION SIGNAL**

Art Group: 2686

Examiner: MOORE, JAMES K.

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97

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In accordance with the duty of disclosure, enclosed is a copy of Information Disclosure Statement by Applicant (form PTO/SB/08), which is being submitted concurrently with the Continuation Application. It is respectfully requested that the cited references be considered and that the enclosed copy of PTO/SB/08 be initialed by the Examiner to indicate such consideration and a copy thereof returned to applicant(s). Some or all of the references listed on the enclosed PTO/SB/08 were previously identified in the parent application (Application No. 10/135,979, filed April 29, 2002) and copies of the references were furnished at that time. Accordingly, per 37 CFR §1.98(d)(1) additional copies of those references are not submitted herewith.

The submission of this Information Disclosure Statement is not to be construed as a representation that a search has been made in the subject application and is not to be construed as an admission that the information cited in this statement is material to patentability.

Please charge any fees due to Deposit Account 02-2666. A duplicate copy of the Fee Transmittal (PTO/SB/17) is enclosed for this purpose.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: 10/24/03


Adam Furst, Reg. No. 51,710

12400 Wilshire Blvd., 7th Floor
Los Angeles, California 90025
(408) 947-8200

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Vineta T. Tufono

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US Department of Commerce Patent and Trademark Office <i>1 of 9</i> Form PTO-1449 (Modified)	Atty. Docket No.: 015685.P023DC	Application No.: Not yet assigned
	Applicant: Boros et al.	
	Filing Date: Concurrently Herewith	

US Patent Documents

Examiner's Initials	Date	Document Number	Name	Class	Sub-Class	Filing Date
	10/04/88	4,775,997	West Jr. et al.			
	01/03/89	4,796,291	Makino			
	05/02/89	4,827,395	Anders et al.			
	05/09/89	4,829,554	Barnes et al.			
	06/06/89	4,837,800	Freeburg et al.			
	08/08/89	4,855,748	Brandao et al.			
	03/20/90	4,910,794	Mahany			
	05/01/90	4,922,517	West, Jr. et al.			
	05/15/90	4,926,186	Kelly et al.			
	07/10/90	4,940,963	Gutman et al.			
	08/07/90	4,947,452	Hattori et al.			
	09/04/90	4,955,082	Hattori et al.			
	10/23/90	4,965,732	Roy, III et al.			
	10/23/90	4,965,849	Kunihiro			
	10/23/90	4,965,850	Schloemer			
	11/20/90	4,972,151	Rosen			
	01/29/91	4,989,204	Shimizu et al.			
	08/20/91	5,041,833	Weinberg			
	10/01/91	5,052,799	Sasser et al.			
	03/03/92	5,093,924	Toshiyuki et al.			
	04/07/92	5,103,459	Gilhousen et al.			
	04/28/92	5,109,535	Kume et al.			

Foreign Patent Documents

Examiner's Initials	Date	Document Number	Country	Class	Sub-Class	Translation
	Apr-95	7-170548	Japan			
	1/1/98	98/01963	WO			
	Apr-98	98/17071	WO			
	Jul-98	98/28864	WO			
	7/1/98	98/33346	WO			

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US Patent Documents

Examiner's Initials	Date	Document Number	Name	Class	Sub-Class	Filing Date
	12/02/97	5,694,416	Johnson			
	12/09/97	5,697,066	Acampora			
	03/10/98	5,726,978	Frodigh et al.			
	03/24/98	5,732,076	Ketseoglou et al.			
	04/21/98	5,742,904	Pinder et al.			
	04/28/98	5,745,858	Sato et al.			
	05/05/98	5,748,676	Mahany			
	05/12/98	5,752,165	Hokkanen			
	06/30/98	5,774,461	Hyden et al.			
	09/15/98	5,809,009	Matsuoka et al.			
	09/15/98	5,809,019	Ichihara et al.			
	10/06/98	5,818,918	Fujii			
	10/06/98	5,819,182	Gardner et al.			
	10/20/98	5,825,762	Kamin, Jr. et al.			
	10/27/98	5,828,658	Ottersten, et al.			
	12/01/98	5,845,212	Tanaka			
	02/02/99	5,867,123	Geyh et al.			
	03/16/99	5,884,148	Bilgic et al.			
	03/23/99	5,887,038	Golden			
	05/18/99	5,905,721	Liu et al.	455	562	
	02/01/02	6,192,256B1	Whinnett			

Foreign Patent Documents

Examiner's Initials	Date	Document Number	Country	Class	Sub-Class	Translation
	Apr-98	WO98/17037	PCT	H04L	27/22	English
	12/14/95	WO95/34103	PCT	H01Q	3/026	English
	5/22/96	EP0713261A1	EPO	H01Q	3/026	English
	7/30/97	EP0786914A2	EPO	H04Q	7/022	English

Other Documents (Including Author, Title, Date, Pertinent Pages, etc.)

PCT Search Report, PCT/US99/08856, 2/8/99, 5 pps.

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US Patent Documents

Examiner's Initials	Date	Document Number	Name	Class	Sub-Class	Filing Date
	10/23/90	4,965,732	Roy, III et al.	364	460	11/02/87
	12/28/93	5,274,844	Harrison et al.	455	25	05/11/92
	01/04/94	5,276,907	Meidan	455	33.3	01/07/91
	05/07/96	5,515,378	Roy, III et al.	370	95.1	12/12/91
	06/25/96	5,530,449	Wachs et al.	342	174	11/18/94
	08/13/96	5,546,090	Roy, III et al.	342	174.0	04/28/94
	09/03/96	5,553,074	Acampora			
	09/10/96	5,555,445	Booth			
	09/17/96	5,557,657	Barnett			
	10/15/96	5,565,873	Dean			
	10/15/96	5,566,209	Forssen et al.			
	11/19/96	5,576,717	Searle et al.			
	01/07/97	5,592,490	Barratt et al.	370	310	01/20/95
	01/21/97	5,596,625	LeBlanc			
	02/11/97	5,603,082	Hamabe			
	02/11/97	5,603,089	Searle et al.			
	02/25/97	5,606,729	D'Amico et al.			
	03/25/97	5,615,409	Forssen et al.			
	04/15/97	5,621,752	Antonio et al.			
	04/29/97	5,625,880	Goldburg			
	04/29/97	5,625,885	Nakazawa et al.			
	06/10/97	5,638,375	Dettro et al.			
	06/24/97	5,642,353	Roy, III et al.			
	07/15/97	5,649,287	Forssen et al.			
	09/30/97	5,673,291	Dent			
	10/07/97	5,675,581	Soliman			
	10/14/97	5,678,188	Hisamura			
	11/04/97	5,684,836	Nagayasu et al.			
	11/18/97	5,689,219	Piirainen			
	11/18/97	5,689,502	Scott			
	06/01/99	5,909,470	Barratt et al.	375	324	10/11/96
	06/22/99	5,914,946	Avidor et al.			
	07/27/99	5,930,243	Parish et al.	370	334	10/11/96
	02/08/00	6,023,203	Parish et al.			
	03/14/00	6,037,898	Parish et al.	342	174	10/10/97
	11/28/00	6,154,661	Goldburg	455	562	12/10/97

Other Documents (Including Author, Title, Date, Pertinent Pages, etc.)

PCT Search Report, US98/25364, 5/11/99.

Zhang et al., "Performance of a Modified Polling Strategy for Broadband Wireless LANs in a Harsh Fading Environment", 1991, GLOBECOM 1991, pp. 1141-1146.

Examiner

Date Considered

<p style="text-align: center;">US Department of Commerce Patent and Trademark Office</p> <p style="text-align: center;">4 02 9</p> <p style="text-align: center;">Form PTO-1449 (Modified)</p>	Atty. Docket No.:	Application No.:
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	Boros et al.	
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US Patent Documents

Examiner's Initials	Date	Document Number	Name	Class	Sub-Class	Filing Date
	11/28/72	3,704,465	Masak et al.			
	11/20/73	3,774,209	Fleming et al.			
	03/19/74	3,798,645	Baurle et al.			
	12/03/74	3,852,749	Kohler			
	03/23/76	3,946,385	Ewen			
	01/25/77	4,005,379	Lerner			
	07/12/77	4,035,746	Covington Jr.			
	04/18/78	4,085,319	Deitz et al.			
	12/05/78	4,128,740	Graziano			
	04/21/81	4,263,568	Nemit			
	02/16/82	4,316,191	Sawatari et al.			
	3/1/83	4,375,622	Hollingsworth et al.			
	2/28/84	4,434,505	Gutleber			
	10/2/84	4,475,010	Huensch et al.			
	12/2/86	4,626,859	Stansfield			
	01/27/87	4,639,732	Acoraci et al.			
	01/27/87	4,639,914	Winters			
	04/14/87	4,658,096	West Jr., et al.			
	04/12/88	4,737,794	Jones			
	04/12/88	4,737,975	Shafer			
	05/03/88	4,742,356	Kuipers			
	06/07/88	4,750,147	Roy, III et al.			

Other Documents (Including Author, Title, Date, Pertinent Pages, etc.)

	Acampora et al., "A New Adaptive MAC Layer Protocol for Wireless ATM Networks in Harsh Fading and Interference Environments", 1997 IEEE, pp. 410-415.
	Agee, "Blind Separation and Capture of Communication Signals Using a Multitarget Constant Modulus Beamformer", 10/7/89 Proc. IEEE Military Communications Conference, Vol. 2, pp. 1-12.
	Aschied et al., "An All Digital Receiver Architecture for Bandwidth Efficient Transmission at High Data Rates", 1989, IEEE Transactions on Communications, Vol. 37, No. 8, pp. 804-813.
	Friedlander et al., "Direction Finding for Wideband Signals Using an Interpolated Array", 1991, IEEE Publication, pp. 583-587.
	Friedlander, "Direction Finding Using an Interpolated Array", 4/3/90, International Conference on Acoustics, Speech, and Signal Processing, Vol. 5, pp. 2951-2954.

Examiner	Date Considered
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US Patent Documents

Examiner's Initials	Date	Document Number	Name	Class	Sub-Class	Filing Date
	6/23/92	5,124,697	Moore			
	8/25/92	5,142,253	Mallavarpu et al.			
	10/27/92	5,159,593	D'Amico et al.			
	10/19/93	5,255,210	Gardner et al.			
	11/09/93	5,260,968	Gardner et al.			
	11/16/93	5,262,789	Silverstein			
	02/01/94	5,283,540	Myer			
	03/29/94	5,299,148	Gardner et al.			
	08/02/94	5,335,249	Krueger et al.			
	09/06/94	5,345,596	Buchenhorner et al.			

Other Documents (Including Author, Title, Date, Pertinent Pages, etc.)

	Franks, "Syncrhonization Subsystems: Analysis and Design", 1981, Digital Communications Satellite/Earth Station Engineering, pp. 294-335.
	Ganz et al., "a Data-Derived Reference Signal Technique for Adaptive Arrays", IEEE Transactions on Communications, Vol. 37, No. 9, 9/1989, pp. 975-983.
	Iltis et al., "A Digital DS Spread-Spectrum Receiver with Joint Channel and Doppler Shift Estimation", IEEE Transactions on Communications, Vol. 39, No. 8, 8/1991, pp. 1255-1267.
	Krishnamurthy et al., "Polling Based Media Access Protocols for Use with Smart Adaptive Array Antennas" 1998 IEEE, pp. 337-344.
	Lee et al., "Decision Directed Carrier Recovery - Chapter 16: Carrier Recovery", 1994 Digital Communications, 2nd Edition, Kluwer Academic Pub., pp. 725-736.
	Lee et al., "Decision Directed Carrier Recovery - Chapter 17: Timing Recovery", 1994 Digital Communications, 2nd Edition, Kluwer Academic Pub., pp. 737-764.
	Constant Modulus Signals", Proceedings, 1998 Asilomar Conference on Signals, Systems, and Computers (ACSSC-1988), pp. 432-436.
	Dept. of Electrical Engineering, Mobile and Portable Radio Research Group, Section 3.8, pp. 64-71.
	Received at an Antenna Array", Proc. Fifth Annual IEEE Dual Use Technologies and Applications Conference.
	Applications in Mobile Communications", SPIE 1994 "Advanced Signal Processing Algorithms, Architectures, and Implementations V", Vol. 2296, pp. 230-241.

Examiner

Date Considered

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Filing Date:

Concurrently Herewith

US Patent Documents

Examiner's Initials	Date	Document Number	Name	Class	Sub-Class	Filing Date
	11/01/94	5,361,303	Eatwell			
	11/22/94	5,367,559	Kay et al.			
	01/03/95	5,379,320	Fernandes et al.			
	02/07/95	5,387,915	Moussa et al.			
	06/06/95	5,423,072	Iwashita et al.			
	07/04/95	5,430,760	Dent			
	12/12/95	5,475,864	Hamabe			
	12/12/95	5,475,868	Duque-Anton et al.			
	03/05/96	5,497,505	Koohgoli et al.			
	05/07/96	5,515,378	Roy, III et al.			
	06/25/96	5,530,917	Andersson et al.			
	07/02/96	5,532,706	Reinhardt et al.			
	06/16/96	5,537,438	Mourot et al.			
	08/06/96	5,543,801	Shawyer			
	08/20/96	5,548,813	Charas et al.			

Other Documents (Including Author, Title, Date, Pertinent Pages, etc.)

	Papadias et al., "A Space-Time Constant Modulus Algorithm for SDMA Systems", 1996, Proceedings, IEEE 46th Vehicular Technology Conference, pp. 86-90.
	Rashid-Farrokh et al., "Downlink and Uplink Capacity Enhancement in Power Controlled Cellular Systems", Proceedings, 1997 IEEE 47th Vehicular Technology Conference, Vol. 2, 5/97,
	Rashid-Farrokh et al., "Downlink Power Control and Base Station Assignment", IEEE Communications Letters, Vol. 1, No. 4, 07/97, pp. 102-104.
	Rashid-Farrokh et al., "Joint Power Control and Beamforming for Capacity Improvement in Wireless Networks with Antenna Array", 1996, IEEE GLOBECOM 1996, Vol. 1, pp. 555-559.
	Rashid-Farrokh et al., "Transmit Beamforming for Cellular Communication Systems", Conference on Information Sciences and Systems, CISS-97; 3/1997, 4 pps.
	Rashid-Farrokh et al., "Transmit Diversity and Equalization for Power Controlled Wireless Networks", Conference Record 31st Asilomar Conference on Signals, Systems, and Computers, Vol. 1, 11/97, pp. 620-624.
	Swindlehurst et al., "Analysis of a Decision Directed Beamformer", IEEE Transactions on Signal Processing, Vol. 43, No. 12, 12/95, pp. 2920-2927.
	Xu et al., "Throughput Multiplication of Wireless LANs for Multimedia Services: SDMA Protocol Design", 1994, IEEE, pp. 1326-1332.

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US Patent Documents

Examiner's Initials	Date	Document Number	Name	Class	Sub-Class	Filing Date
	08/08/95	5,440,281	Wey et al.			
	09/05/95	5,448,621	Knudsen			
	10/10/95	5,457,812	Siira et al.			
	11/07/95	5,465,399	Oberholtzer et al.			
	11/28/95	5,471,647	Gerlach et al.			
	09/22/98	5,812,090	Chevalier et al.			

Other Documents (Including Author, Title, Date, Pertinent Pages, etc.)

	Papadias et al., "A Space-Time Constant Modulus Algorithm for SDMA Systems", 1996, Proceedings, IEEE 46th Vehicular Technology Conference, pp. 86-90.
	Cellular Systems", Proceedings, 1997 IEEE 47th Vehicular Technology Conference, Vol. 2, 5/97, pp. 647-651.
	Rashid-Farrokhi et al., "Downlink Power Control and Base Station Assignment", IEEE Communications Letters, Vol. 1, No. 4, 07/97, pp. 102-104.
	Rashid-Farrokhi et al., "Joint Power Control and Beamforming for Capacity Improvement in Wireless Networks with Antenna Array", 1996, IEEE GLOBECOM 1996, Vol. 1, pp.
	Rashid-Farrokhi et al., "Transmit Beamforming for Cellular Communication Systems", Conference on Information Sciences and Systems, CISS-97; 3/1997, 4 pps.
	Rashid-Farrokhi et al., "Transmit Diversity and Equalization for Power Controlled Wireless Networks", Conference Record 31st Asilomar Conference on Signals, Systems, and Computers, Vol. 1, 11/97, pp. 620-624.
	Swindlehurst et al., "Analysis of a Decision Directed Beamformer", IEEE Transactions on Signal Processing, Vol. 43, No. 12, 12/95, pp. 2920-2927.
	Talwar et al., "Blind Estimation of Multiple Co-Channel digital Signals Arriving at an Antenna Array", 1993, Proc. 27th Asilomar Conference on Signals, Systems, and
	Xu et al., "Throughput Multiplication of Wireless LANs for Multimedia Services: SDMA Protocol Design", 1994, IEEE, pp. 1326-1332.

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Boros et al.

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Concurrently Herewith

Foreign Patent Documents

Initials	Date	Number	Country	Class	Class	Translation
	May-91	2 237 706 A	UK			
	2/15/95	0 639 035 A1	EPO			
	5/1/96	2 295 524 A	UK			
	6/4/97	0 777 400 A2	EPO			
	1/13/95	0 665 665 A1	EPO			
	11/1/97	2 313 261 A	UK			

Other Documents (Including Author, Title, Date, Pertinent Pages, etc.)

PCT Search Report, PCT/US99/08856, 2/8/99, 5 pps.

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<p>Substitute for form 1449A/PTO</p> <p>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</p> <p><i>(use as many sheets as necessary)</i></p>				<p><i>Complete if Known</i></p>	
Sheet	9	of	9	Application Number	Not yet Assigned
				Filing Date	
				First Named Inventor	Tibor Boros
				Art Unit	2686
				Examiner Name	MOORE, JAMES K.
				Attorney Docket Number	15685P023DC

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Based on PTO/SB/08A (08-03) as modified by Blakely, Solokoff, Taylor & Zafman (wtr) 08/11/2003.

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